

**Amendments to the Claims:**

This listing of claims will replace all prior version, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A three dimensional conical horn antenna coupled image detector comprising:

a plurality of supports for supporting a horn antenna structure on the upper section of a substrate;

a horn antenna waveguide formed at the center of said horn antenna structure;

an image detector at the lower section of said horn antenna wave guide;

an absorption layer in said image detector which has an identical ~~width~~ diameter to that of a bottom cross section of said horn antenna waveguide; and

a thermal isolation leg in said image detector, which ~~has a larger width to that~~ spans a greater distance than the diameter of said horn antenna wave guide.

2. (Currently Amended) The image detector as claimed in claim 1, wherein said thermal isolation leg is ~~manufactured in~~ configured to have a circular shape in order to be capable of increasing the length of the leg.

3. (Withdrawn) A manufacturing method for a three dimensional conical horn antenna coupled image detector comprising:

a deposition step where a sacrificial layer is deposited on the upper section of the substrate;

a pattern forming step where a pattern for said sacrificial layer is formed by performing a patterning process using the first etching mask;

a deposition step where a first silicon nitride layer is formed on the whole surface of the

products from the previous steps;

a pattern forming step where a pattern for said first silicon nitride layer is formed by performing a patterning process using the second etching mask;

a deposition step where a vanadium oxide layer is deposited on the whole surface of the products from the previous steps;

a pattern forming step where a pattern for said vanadium oxide layer is formed by performing a patterning process using the third etching mask;

a deposition step where a conductive layer is deposited on the whole surface of the products from the previous steps;

a pattern forming step where a pattern for said conductive layer is formed by performing a patterning process using the fourth etching mask;

a deposition step where a second silicon nitride layer is deposited on the whole surface of the products from the previous steps;

a pattern forming step where a pattern for said second silicon nitride layer is formed by performing a patterning process using the fifth etching mask;

a deposition step where a third silicon nitride layer is deposited on the whole surface of the products from the previous steps;

a pattern forming step where a pattern for a side wall space is formed by performing a patterning process using the sixth etching mask; and

an aligning step where after said sacrificial layer is removed from the products from the previous steps, an aligning process is performed using the seventh etching mask.

4. (Withdrawn) The method as claimed in claim 3, wherein said sacrificial layer is a polyimide layer with a thickness between 2.0 and 2.5  $\mu\text{m}$ .

5. (Withdrawn) The method as claimed in claim 3, wherein the pattern size of said sacrificial layer is identical to the external diameter of the thermal isolation leg of the image detector.

6. (Withdrawn) The method as claimed in claim 3, wherein the pattern size of said vanadium oxide layer is identical to the diameter of the absorption layer of the image detector.

7. (Withdrawn) The method as claimed in claim 3, wherein only the region around said conductive layer corresponding to the absorption layer of the image detector is removed by etching.

8. (Withdrawn) The method as claimed in claim 4, wherein the pattern size of said sacrificial layer is identical to the external diameter of the thermal isolation leg of the image detector.